SUBCAPSULAR LIVER HEMATOMA AFTER COLONOSCOPY DIAGNOSED BY EMERGENCY DEPARTMENT BEDSIDE ULTRASONOGRAPHY

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Abstract—Background: Hepatic subcapsular hematoma is an uncommon cause of right upper quadrant pain in the Emergency Department. It must be recognized early, as large volumes of acute blood loss and rupture into the peritoneum carry significant morbidity and mortality. In the absence of gallbladder disease, the differential diagnosis should include liver pathology. Bedside ultrasonography can be used to identify such lesions. Objectives: To discuss the presentation, evaluation, and management options of hepatic subcapsular hematoma. Case Report: We report a case of a 30-year-old woman who presented with the chief complaint of right upper quadrant pain radiating to the right scapula 6 h after a screening colonoscopy for intestinal polyps. Emergency physician-performed bedside ultrasonography revealed a large hyperechoic mass in the right lobe of the liver. Radiology-performed comprehensive ultrasonography and subsequent computed tomography scan of her abdomen and pelvis revealed a subcapsular hematoma without intestinal perforation. Conclusion: In a patient with undifferentiated right upper quadrant abdominal pain, bedside ultrasonography is a rapid and effective modality in the diagnosis of liver masses, including subcapsular hematoma. © 2013 Elsevier Inc.

Keywords—subcapsular hematoma; emergency ultrasound; abdominal pain; colonoscopy; computed tomography

INTRODUCTION

The presentation of a hepatic subcapsular hematoma has a multitude of etiologies, ranging from traumatic, obstetric, vascular, neoplastic, and iatrogenic, among others. Patients typically present with right upper quadrant abdominal pain, which may include signs and symptoms of shock if the bleeding is severe. Thus, it is important to recognize this diagnosis in the Emergency Department (ED). Although computed tomography is the preferred imaging modality for diagnosis, rapid bedside ultrasonography is an effective tool to narrow the differential diagnosis and identify the lesion. We will discuss a case of a hepatic subcapsular hematoma that presented several hours after a diagnostic colonoscopy.

CASE REPORT

A 30-year-old woman presented to the ED with severe epigastric and right upper quadrant pain radiating to the right scapula after a colonoscopy 6 h prior. The patient was otherwise well before the procedure, and the pain began shortly after the colonoscopy was performed. She also complained of one episode of non-bilious, non-bloody emesis and watery diarrhea with scant rectal bleeding.
after the procedure. The patient had been observed in the post-op care unit after the colonoscopy, with no improvement in pain, and was sent to the ED by her gastroenterologist to obtain imaging for possible intestinal perforation. The colonoscopy had been performed due to irregular bowel habits and concern for possible intestinal polyps. The patient had been in remission for 3 years after chemotherapy for choriocarcinoma of the uterus complicated by metastatic spread to the lungs and brain.

Upon presentation to the ED, the patient’s initial vital signs were as follows: temperature 96.6°F, pulse 58 beats/min, and blood pressure 113/54 mm Hg. She denied chest pain, shortness of breath, or fever. Physical examination was unremarkable except for significant tenderness in the right upper quadrant and epigastrium. Urine pregnancy test was negative. She was given morphine and ondansetron for pain and nausea, with mild relief of symptoms. Laboratory tests revealed unremarkable results for liver function tests, coagulation studies, and basic electrolyte panel. A complete blood count showed no leukocytosis, but the patient’s hemoglobin and hematocrit was 11.0 g/dL/32.5% and platelets 204,000/mm³. Upright chest and abdominal radiographs in the left lateral decubitus position were obtained, showing no abnormalities. However, her pain persisted, primarily in the right upper quadrant.

Emergency physician-performed bedside ultrasound was done using a portable ultrasound machine and a 9–3 MHz curvilinear probe (Zonare, Mountain View, CA) that showed no cholelithiasis or other signs of acute cholecystitis. However, on transverse view, a large hyperechoic mass on the right lobe of the liver displacing the right kidney was visualized (Figure 1). Radiology-performed comprehensive ultrasound was subsequently obtained, confirming a 17.0 × 13.2 × 14.1 cm hepatic mass (Figure 2). A computed tomography (CT) scan confirmed the hyperechoic mass to be a subcapsular hematoma in the right lobe of the liver measuring 18.0 × 5.9 cm (Figure 3), with no evidence of intestinal perforation.

The patient was admitted to the medical Intensive Care Unit for further evaluation of the subcapsular hematoma. On hospital day 3, a CT scan of the abdomen/pelvis with contrast showed an enlarging hematoma measuring 19.2 × 8.9 cm (Figure 4). The patient received 2 units of packed red blood cells after a hemoglobin and hematocrit drop from 11.0 g/dL/32.5% on date of admission to 7.8 g/dL/24.1% on hospital day 4. She was transferred to an outside institution on hospital day 5 to be closer to doctors who were familiar with her past medical history. On telephone follow-up 2 months after presentation to our ED, the patient remains in stable condition and has not had any need for follow-up care of this hematoma. She states that she had no further transfusions or any surgical interventions performed while at the outside hospital. She was released on hospital day 9.

**DISCUSSION**

Subcapsular hematoma of the liver has been defined in the literature as a collection of blood between the liver parenchyma and Glisson capsule (1). The majority of these hematomas are located in the right lobe of the liver (75% of cases). Rupture of the hematoma into the peritoneum carries a high mortality rate, up to 75% (2,3).

Trauma is the most common cause of subcapsular hematomas of the liver. Anatomic etiologies of spontaneous
subcapsular hematomas of the liver are associated with preeclampsia and HELLP (Hemolysis, Elevated Liver enzymes, Low Platelet count) syndrome, liver tumors (especially hepatocellular carcinoma and hepatocellular adenoma), intrahepatic aneurysms, peliosis hepatis, human immunodeficiency virus, Wegener granulomatosis, and polyarteritis nodosa (3–7). Hemodialysis, anabolic steroids, and treatment with warfarin and streptokinase also increase the risk of spontaneous subcapsular hematomas of the liver (8). Our patient was not on any anti-platelet or other anti-coagulation medication at the time of diagnosis; in fact, she was only on hormonal contraception.

The medical literature is replete with reports of iatrogenic subcapsular hematomas of the liver, notably after laparoscopic cholecystectomy, endoscopic retrograde cholangiopancreatography, and extracorporeal shock wave lithotripsy (9–13). However, to the authors’ knowledge, there have been no documented cases of subcapsular hematomas of the liver after colonoscopy. The overall complication rate of colonoscopy is low, and the rate of perforation after a colonoscopy has been shown to be as low as 0.3% (14). Because no intestinal perforation was visualized on the CT scan, it was thought that the instrumentation from the colonoscopy triggered the patient’s pain. There is a well-known association between hepatocellular adenomas and the use of hormonal contraception, and it was hypothesized that the patient had an occult adenoma that bled, though no specimens were histologically analyzed. Hemorrhagic hepatic metastases may also lead to subcapsular hematomas, but the patient had no knowledge of, nor was there any imaging to suggest, such an etiology of her bleeding (15).

Initially on ultrasound, a subcapsular hematoma may appear as a hyperechoic heterogeneous mass due to the clotted blood, as was seen in our patient, but will eventually become hypoechoic. The borders of the mass are typically irregular. These ultrasonographic features are also found in other liver masses, such as abscesses and tumors, which make them difficult to differentiate from each other (16,17).

Conservative management occurs in most documented cases of iatrogenic subcapsular hematomas of the liver, as long as the hematoma remains contained within the Glisson capsule. Treatment usually entails intravenous fluids, pain control, prophylactic antibiotics, and transfusion of packed red blood cells if a precipitous drop in hemoglobin is discovered (3). Percutaneous drainage, angiographic embolization, and exploratory laparotomy with drainage have been described as management options in patients with hemodynamic instability (10). Recombinant Factor VIIa has also been reported as a successful treatment in a patient with hypovolemic shock from a large subcapsular hepatic hematoma after PLB (18).

CT is the preferred imaging modality in the diagnosis of subcapsular hematoma. However, the role of ultrasound in the identification of subcapsular hematoma of the liver cannot be discounted, especially in patient populations that physicians are more reluctant to expose to radiation, particularly children and women of reproductive age, which was the case for this patient (19). In addition, because emergency physicians can perform an ultrasound examination at the patient’s bedside, integral information can be gleaned more quickly and can shape disposition more clearly.

CONCLUSION

Right upper quadrant abdominal pain may be the only presenting symptom of a hepatic subcapsular hematoma.
The utility of rapid bedside ultrasonography beyond evaluation of the gall bladder can provide valuable information that will allow the emergency physician to narrow down the differential diagnosis and provide appropriate and timely care for the patient.

REFERENCES